

The Ballarat Naturalist

February 2016



Listening to the Wild

Birdsong, music & evolution of listening

Speaker - Andrew Skeoch

Our last speaker of the year, naturalist and field sound recordist, Andrew Skeoch struck an especially resonant note for the FNCB with his fascinating talk on recording and analysing birdsong and other natural sounds in ecosystems around the world. He started his career as a musician, but his life changed when a friend lent him a field recorder and microphone, and he found himself recording the pre-dawn repertoire of the Spiny-cheeked Honeyeater at 4am whilst camping at Mootawingi. He felt deeply affected: *"A light went on which was quite haunting. I found that listening to nature gave me a new sense of connection and curiosity.....in which the head and heart are both important"*. He realised for the first time that sounds are an integral and distinctive part of any landscape.

Andrew took some time to identify the bird he had recorded because, although he saw the Spiny-cheeked Honeyeater regularly during the day, it had a different call to this pre-dawn song, and it was dark whenever he heard the repertoire that he had captured on tape. He eventually learned that some birds, particularly Honeyeaters, have different repertoires at dawn, as well as circumstances like marking territory, alerting, flying, feeding or mating.

He played us that first recording of the Spiny-cheeked Honeyeater, and also showed us the spectrogram of the recording – an eye-opening visual representation of the spectrum of frequencies (hertz) of what we were hearing plotted over time. (See p.2.) Spectrograms show the structure of the sounds.

Andrew has lived with his partner Sarah in Newstead for 18 years, and together they travel Australia and the world recording birdsong and other sounds of nature. The second recording and spectrogram he played was from Newstead – an incredible cacophony of sound

involving about 15 different species of birds, in addition to amphibians and insects.

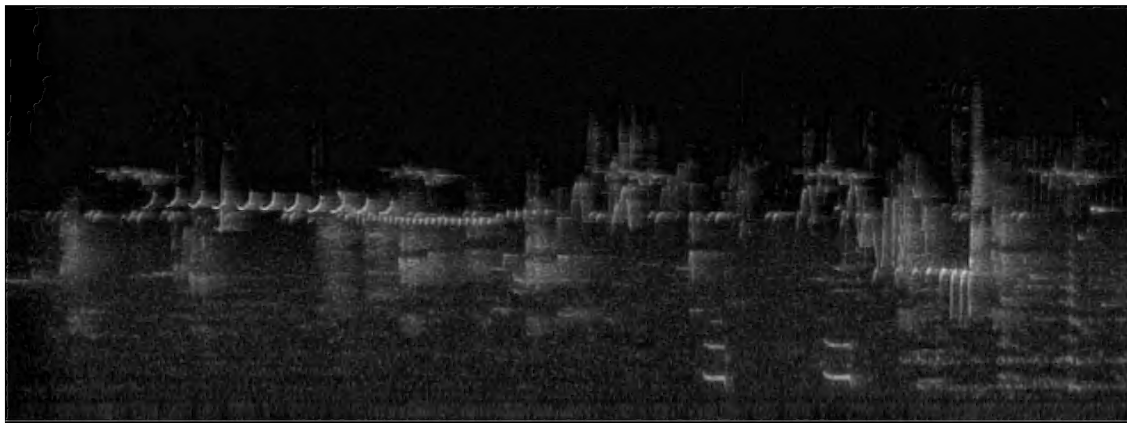


Photo: Spectrogram of a bird song.

He had labelled and coloured in each of these species so that we could clearly see the patterns and pitch of each bird's and frog's call. We learned that there are at least four things to listen for and think about in hearing such a recording:

- Sentience – we are hearing living creatures giving voice to themselves in the world
- Species – the collection of different species, each with a different call signature, often related to behaviours
- Ecosystem – the whole natural soundscape in which we can deduce the type and health of the landscape (forest, gorge, desert, even the structure of the vegetation). For example, if you can hear Weebills you would be safe to assume the recording was made in an area with a tree canopy. If you can hear Magpies, open country is probably not far away, and Superb Fairy-wrens generally signify a healthy understorey.
- Evolution – sounds reflect evolutionary pathways and relationships of species.

The repertoire of each species is the basis of the way nature works acoustically. In the acoustics we hear different calls from: different species and for different purposes; reflections of ecosystem structure, such as trees, understory and water; as well as time of day; season; diversity; and health of the ecosystem. Acoustic diversity is a reflection of biodiversity.

Clues to the evolution of sound in nature

There is so much more information in the sounds of nature than just

the frequencies, as..... ‘*we are hearing the result of over 500 million years of evolution*’. Andrew explained that if we could listen to early ecosystems (aquatic) we would probably hear mainly ‘clicks’. Later in evolutionary time when insects moved onto land, clicks and scrapes would have still probably been the dominant form of communication, and early land organisms may have used the dense soil matrix to continue to carry vibrations effectively.

Given that air is nearly 800 times less dense, it probably took a long time for evolving creatures to develop sounds that worked in the air. According to evidence in the fossil record, Crickets and Katydid appear to be amongst the first insects to communicate through air, and amphibians, developing at around the same time, were and are uniquely identified by their own signature sounds and repertoire.

We then heard recordings of Cicadas from Sulawesi, Indonesia and insects and frogs, observing the unique “signatures” of these calls on spectrograms.

It took 300 million years for birds to develop after the dinosaurs. “Did dinosaurs vocalise?” Andrew asked. No-one knows, but it seems probable. Andrew played a hypothetical ‘dinosaur’ soundscape – based on slowed-down sounds of birds with ancient roots like Cassowary, Ostrich and Peacock.

Andrew played a wonderful recording of a male Lyrebird mimicking the songs of eight or nine other birds, recorded in mid-winter when the birds being mimicked are not calling, the perfect time to stand out in the crowd. It seems that because the lyrebird’s winter mating calls are so effective, the species has evolved to have the longest gestation period of any passerine (perching birds), to maximise the chance that conditions are amenable for the chick’s survival when they hatch. Lyrebirds’ ability to mimic other species is commonly considered to be a highly evolved feature. According to Aboriginal tradition, the Lyrebird ‘handed out calls to the other birds’.

Bird-song can be a primary vector for differentiation of species. The Chirruping Wedgebill and Chiming Wedgebill look identical, but are differentiated into two species based on very different calls.

Qualities and types of bird-calls

Bird-calls have two main features – the tones/notes and the scratchy, textural sounds. Tones/notes can be heard over long distances, with many birds seemingly focusing their energies into one “laser beam of sound”. Harmonic overtones seem to be produced almost inciden-

tally. Birds can use their tonal sounds to mediate territorial boundaries without having to move, which is highly energy-efficient.

Textural features are not heard from a distance, but are important for closer communication, e.g. bonding and courting. To illustrate the textural sounds within a bird-call, Andrew played us a series of clicks, one of many calls by White-winged Choughs that, in this case, is probably a bonding call. Eugene Morton has hypothesized that because the textural sounds don't carry very far, birds can use the decay of the sound to work out how far away a neighbouring bird is. It is easier to locate the source of textural sounds.

Some species have slight variations in the composition of their calls across their distribution, reflecting the acoustic properties of the environments in which they live. For example, the Rufous Whistler in Victoria has a similar call to the Rufous Whistler of the Northern Territory. This is because the acoustics of their open woodland habitat remains similar across their range. They are said to have different 'regional dialects'. However the Golden Whistler of Victoria - a mid-storey feeder in acoustically open eucalypt forests - has a very different call than the once-named Golden Whistler of the Solomon Islands, a bird of dense equatorial forest. This significant difference in call is an indicator that the two Golden Whistlers are actually different species, something acknowledged in the provisional renaming of the latter as the Oriole Whistler.

The European Nightingale is an example of a third factor shaping birdsong repertoire; sexual selection, which can lead to spectacularly extended repertoires.

Birdsong

Birdsong gives us the most extraordinary range of sounds in the biological world. The air-temperature and humidity of the pre-dawn and dawn air is the acoustically optimal time for calling. The dawn chorus involves mainly passerines, a relatively recent group, yet highly evolved in their song. Amidst the cacophony, each species has its own cognitive recognition system, enabling them to tune in to their own species' signature song. They are very precise in their local dialect and repertoire, and can readily identify sounds that may represent threats.

Mammal sounds

We listened to the sound of dawn calls and noises of an African

wetland ecosystem - 200 hippos, frogs, etc. - and heard of the perils faced to capture such a recording. We, mammals, are emotionally expressive in our vocalisation, and this feature (in combination with rhythm) seems to have contributed to the beginnings of music. Perhaps this combination of sounds also signalled the beginnings of the evolution of mankind.

We will never know all there is to know about nature, but we are losing opportunities to learn as landscapes continue to be inexorably altered by, and in some cases, lost completely, due to the activities of humans. Some voices audible in nature now will not be there in the future. Andrew played us the songs of two birds that may not be heard long into the future: the Regent Honeyeater with only 200 members left, and the Sooty Owl in south-eastern Australia which is highly endangered. What a loss to our world! Worse still - we now stand to lose, not only individual species, but soundscapes of whole ecosystems, such as that of the Tarkine Wilderness, at risk because it sits above rich tin deposits.

We were played a rich soundscape from Ormiston Gorge in the West MacDonnell Ranges in the NT, recorded on a balmy night with a full moon, and heard the languid, drifting call of a Pied Butcherbird, a Barn Owl, Dotterels, Grebes, an insectivorous bat out hunting, frogs and crickets. It was a holistic and perfect landscape, evocative and affecting of both heart and mind.

Andrew left us with some final musings on the natural world and the oft-prevailing idea that competition is necessary for evolution and natural selection. Perhaps instead, the incredible diversity of environments, habitat niches and sounds in this world have developed to minimise competition and in fact foster cooperation.

Emily Noble

December excursion: Wetlands in Ballarat City

Fifteen members and guests gathered at 1:30pm for our half day December excursion planned and led by Fran Hanrahan and John Mildren. Visiting four areas starting at the North gardens wetlands then heading south, Fran provided an explanation of the operation of the litter traps and pondage areas. These help to remove contaminants from storm water on its way to Lake Wendouree and to creeks and streams. They also are designed as retention areas to assist with flood mitigation. Explanations were complemented by signage at areas which indicted the sources and flow of water. At the North

wetlands in particular the intricate system of retention and bypasses could be seen and a diagram attempted to display the sources and water redirections which have been utilised to assist in maintaining a full level at Lake Wendouree. On the day of our visit there was considerable flow in through one of the bypasses which we assumed was coming from pumps on the Cardigan aquifer in Ring Road, although the sign did not make this clear.

It was a pleasant circuit around the ponds which had ample plantings of Australian vegetation and it was observed that the sign indicating planting by our club, was still in place although it could not be approached due to the water level covering one approach direction and an alternative being covered with growing and dead vegetation.



Photo: Swan banded some time ago at North Wetlands with cygnet

There was a good number of bird species. On entering the reserve we were welcomed by carolling Magpies and we also heard a Little Grassbird and Reed-warbler. On the water we sighted a Purple Swamphen and chick and a Wood Duck with nine chicks. It was interesting that one of the Swans was still wearing its band, No D08, probably from about 10 years ago.

Accompanied by its mate it had one cygnet. Other birds observed included Australian White Ibis, White-faced Heron, Black Duck, Grey Teal, Hardhead, Fairy Wren, Australasian and Hoary-headed Grebe, Coot, Little Pied Cormorant, Grey Fantail, Rainbow Lorikeet and it was particularly rewarding towards the end to get a clear look at a Blue-billed Duck.

It was rather a large convoy of 10 cars that headed off across Ballarat, there being minimal car-pooling as the excursion was to be followed by our Christmas gathering. However, Fran had provided very clear printed route and destination instructions so despite the interruption of other traffic and lights, we all finished up efficiently at the next destination being the Redan Wetland on the Yarrowee Creek off Humffray Street South. The walk there took us on a bridge over the Yarrowee to ponds where Pobble Bonks could be heard calling clearly. Recent plantings demonstrated that rehabilitation work is progressing but weeds like hemlock, dock and fennel were conspicuous. It was interesting to sample tips of fennel and



Photo: North Gardens Wetlands, Ballarat

notice that it did leave a liquorice taste. The paths around the ponds of over the creek took us on a circuit of the area. At one place a sign provided information about snakes that might be observed.

At first it seemed that not many birds would be observed but by the time we were back at the cars we had seen Black Duck, Swamphen, Lapwing, Grey Teal, Moorhen, Little Pied Cormorant, Brown Thornbill, Little Grassbird, Blackbird and a pair of Wood Ducks with 10 ducklings.

Following instructions we made the short trip to Yuille Station wetland where afternoon tea was welcome and we were joined by Emily and Peter. It was a comparatively short walk down the steep track to a viewing platform then back up the hill to our cars. On, and adjacent to, the water there were Black Duck, Mudlark, New Holland Honeyeaters, White-faced Heron, Starling, Grey Fantail, and Kookaburra. At the viewing platform a complete case of a mudeye including legs created interest.

The final stop was at the Ballarat University Wetland. Here the sides of a multi-sided building were adorned with interesting signs about conservation and flora and fauna of the area. There was a plant list and lists of fauna. One sign, although a bit dated, provided information about brolga flocking sites and research. On the water were Purple Swamphen, Moorhen, Coot and a good number of Hoary-headed Grebe.

A peaceful time was spent gathered on a bridge where water could

be seen flowing between rocks, before heading to Rosebank where Bill Murphy had arranged for us to gather as a group for tea.

Thank you Fran and John for re-acquainting us with these urban wetlands.

Peter Dalman



Photo: Eagles. Club members enjoyed watching Wedge-tailed Eagle chick grow from early October to December 2016 in a nest along the Sunraysia Highway just out of Ballarat

P & C Dalman

Christmas Breakup: Sunday 6th December

Following the club excursion a Christmas breakup function, organised and co-ordinated again by Bill Murphy, was held in the dining-recreation area of the Rosebank homes. The air-conditioned area welcomed those members who continued here from the excursion to be joined by others who had come directly for this function. Bill again had the room set up so we could gather for pre-dinner drinks and nibbles before using the very convenient barbeques to cook. Salads and deserts bought along added to the festivity. The pool table provided entertainment and again allowed me to enjoy my game for the year and demonstrate a sporting inadequacy. Thank you Bill for again hosting this function.

Peter Dalman

SEANNA Autumn Camp
Bellarine Peninsula April 8-11
At the time this newsletter was ready for printing no correspondence had arrived from the club organising the event.

Ideas urgently needed

For syllabus to be completed in early March a decision is required re
October FNCB Meeting and excursion.

Most of the committee will be away at the ANN Conference in Western Australia. If events are to occur in October, 2016, other members are asked if they wish to be involved in contributing and organising a meeting and/or excursion. Ideas will be asked for at the February meeting and arrangements finalised by early March.



State Wide Integrated Flora and Fauna Teams

SWIFFT VIDEO CONFERENCES 2016

Thursday 11 February "Rare and threatened possums"

Thurs 28 April "Threatened species management by local government"

Thurs 28 July Threatened species - population enhancement"

Thurs 27 October "Learning from indigenous knowledge of ecology"

From: Andrew.Arnold@delwp.vic.gov.au

Excerpts from Club Meeting Minutes, Dec 4, 2015

Opening and Apologies President Peter Dalman welcomed 24 members and 3 visitors. Apologies: Chris & Anna Baulch, Mike Sorrell, Andy Arnold, Bill & Kathy Elder, Helen Young-Harvey.

Business Arising from Previous Meeting:

Mt Rothwell Sanctuary tour booked for Club field trip next April (on a Saturday night).

Correspondence: IN

From Kirsty Greengrass, DELWP: confirmation that our logo was shown as a supporter of the Great Victorian Koala Count on the event website.

From Lee Miezis, DELWP: outline of Gov't response to the Inspector-General for Emergency Management's review of performance targets for bushfire fuel management on public land.

From Peter Marriott, Entomological Society of Victoria: information about and order forms for the newest book in Moths of Victoria pro-

ject: Moths Of Victoria 6 - Ghost Moths and Allies.

Business Arising from Correspondence:

J. Petheram moved that the Club make a submission indicating approval of proposal to rename Winter Swamp, Mullawallah Wetland.

Members encouraged to provide feedback to CeRDI re. SWIFFT website at www.swiff.net.au

Considered making a Club donation to the Brush-tailed Phascogale nest box project being undertaken by Friends of Brisbane Ranges. After discussion, J. Petheram moved that the Club pledge \$200 to the Appeal. Will probably be a working bee to install large interpretative signs at La Gerche Trail before Christmas, and another in January to complete the project by January 31, 2016. Details will be emailed out as soon as they are available.

Reports: Treasurer's Report: Opening bal \$16,550.37 Inc \$0
Expenses \$1,426.72 Closing bal: \$15,123.65

Visit to Alan Sonsee's Collection of Aboriginal Artefacts: very interesting collection that presents many unanswered questions (the collection was disturbed during a robbery which separated many artefacts from their labels). Includes hammers, cores, grinding stones, anvils and spears. Currently being catalogued and photographed. Emily to make contact with Geoff Macrae who used to teach with Alan and may be able to fill in some gaps in the information. Bill Murphy to talk to J. Gregurke re his memories of Alan.

Ballarat Environment Network AGM: Small turn-out heard encouraging news about the financial status of BEN, elected a Committee (including the FNCB Secretary) and listened to a great presentation by Mike Wicks about reintroducing threatened orchids into the wild in south-west Victoria.

General Business

Club members are happy to support a request to DELWP to have the orchard of Cork oaks at Mt Beckworth poisoned to enable appropriate soil moisture levels to return for the natural grasses and herbs. J. Gregurke has already received support for the move from past & present members of Friends of Mt Beckworth, Maryborough FNC and Mt Bolton-Mt Beckworth Landcare Group. John to speak to Paul Fernando of Parks Vic about the request and follow-up with a letter.

John G. has suggested that we consider producing a foldout brochure like the "Natural Temperate Grassland Species of the VVP" on the flora of Enfield or the Ballarat region, or perhaps an update of

“Discovering Ballarat’s Bushlands”.

Show & Tell/ Field Reports

At Miners Rest, Claire D. reported that one young Wedge-tailed Eagle appears to have left the nest, hopefully of its own accord, between Nov. 28 and Dec. 2, leaving one still in the nest and looking very active on Dec. 4.

John Mildren found three Latham’s Snipe, many Fairy Martins and a Spotless Crake at Paul’s Wetland, Wendouree on Nov. 27, and one dozen Black-winged Stilts at Winter Swamp late November.

John G. happily spotted a pair of Brolga and six Latham’s Snipe on Winter Swamp on Dec. 4, despite only small patches of water.

Les H. reported that the native Blue-banded Bees had moved from his sage bushes to his lavender bushes at Bungaree.

Wayne was pleased to report that the Grey Fantail and White-naped Honeyeaters were collecting spiderwebs from the Mt Buninyong fire tower for their nest-building. He also noted Kookaburras feeding on worms at his neighbour’s place at Lake Burrumbeet, and a brilliant rainbow seen from the fire tower on Nov. 30.

Peter B. observed many ibis at Lake Wendouree.

Paul N. recorded 29mm of rain at Mt Egerton for Nov., with 92mm of evaporation in the same period. He picked up 6.5Kg of worms migrating along his driveway as the soil dried out, relocating them to the veggie patch. The migration stopped by the first week of Dec. when it was too dry. He also saw a Magpie tenderising a dead mouse on the driveway.

Steve S. was delighted to find his first Peacock Spider *Maratus pavonis* in Canadian.

Peter D. found large numbers of big Carp dead on the banks of Burrumbeet Creek, the result of anglers catching fish attempting to escape the drying lake.

Peter N. soberly reported that the resident Australasian Grebes on his wetland in Monkey Gully, Scarsdale, who had constructed and abandoned three nests before settling on the fourth over a period of three months, had their latest nest plundered by a Brown Goshawk who flew away with its tiny prey on Dec. 5. The Grebes were subsequently keeping their distance from the nest.

Carol observed good numbers of Great Crested Grebes on Lake Wendouree.

CALENDAR 2015-16

February

- Fri 5 *Ants* : Peter Muller, club member
Sun 7 Excursion: *Ants* - Venue TBD, Peter Muller, club member
Tues 23 Committee meeting at Fran's

March

- Fri 4 AGM -Members' Images *Fruits and seeds*
Sun 6 *Hepburn Shire Water Reserves* - John Gregurke , Club member

Committee

President	Peter Dalman	
Vice –Pres	Fran Hanrahan	
Secretary	Emily Noble	
Treasurer	Les Hanrahan	
Claire Dalman		Val Hocking
John Gregurke		John Mildren
Wayne McGuire		

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Meetings are held at the Primary Industries Training Centre, cnr of Gillies and Gregory Sts, on the first Friday of the month at 7.30pm..

Excursions: Leave from the carpark at the Primary Industries Training Centre, cnr Gillies and Gregory Sts. at 9.30 am, unless otherwise advised.

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